

## **IDS Working Paper 201**

### **Biotech firms, biotech politics: negotiating GMOs in India**

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## Summary

This paper seeks to identify and explain the ways in which different firms affected by and involved in the debate about the role of biotechnology in Indian agriculture have sought to advance their interests. It is argued that the public positions of larger biotech and agro-chemical companies, seed enterprises and newer start-up firms and the associations they belong to relate to differences in their underlying corporate strategies. The extent to which these firms are involved in primary research, export their products or require protection for their products helps to determine their political affiliations to the leading industry bodies that are active on biotechnology issues. In turn, each of these associations has been shown to have distinct patterns of interaction with particular government agencies involved in the regulation of biotechnology products, as well as differing degrees of contact with global industry coalitions. Alongside this, individual firms, especially larger companies such as Monsanto, have adopted their own unique and changing approach to policy engagement.

Assessing in precise terms the degree of influence that these industry actors have had upon the course of biotechnology policy in India is almost impossible. Nevertheless, it is clear that through a combination of material influence, in most cases high levels of institutional access, and in a context in which claims about the benefits of biotechnology are echoed and repeated in influential media, firms have played an important role in the evolving regulatory regime. Currently the policy agenda in Delhi appears to be far more influenced by a fairly close-knit policy network of biotech entrepreneurs from larger multinationals and successful start-up firms with good national and global connections. Whose influence runs furthest will ultimately rest on government perceptions regarding the role of biotechnology in India's development trajectory, decisions about which forms of biotechnology development are considered to be most consistent with the national interest, and choices about the appropriate role in this development of foreign investors as opposed to domestic enterprises. Given the enormity and economic and global significance of these choices, we can expect to see continued intense engagement with the policy-process by all actors with a stake in the issue.



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## Preface

### Biotechnology Policy Series

This IDS Working Paper series emerges from a series of three interlinked projects. They involve collaboration between IDS and the Foundation for International Environmental Law and Development (FIELD) in the UK and partners in China (Center for Chinese Agricultural Policy (CCAP)), India (Centre for the Study of Developing Societies, Delhi; Research and Information Systems for the Non-Aligned and Other Developing Countries (RIS), Delhi; National Law School, Bangalore), Kenya (African Centre for Technology Studies, Nairobi) and Zimbabwe.

Three key questions guide the research programme:

- What influences the dynamics of policy-making in different local and national contexts, and with what implications for the rural poor?
- What role can mechanisms of international governance play in supporting the national efforts of developing countries to address food security concerns?
- How can policy processes become more inclusive and responsive to poor people's perspectives? What methods, processes and procedures are required to "democratise" biotechnology?

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This paper is a product of the 'Biotechnology and the Policy Process in Developing Countries' project. Other papers in the Biotechnology Policy Series are listed inside the back cover.

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## 1 Introduction

While there have been a number of attempts to explain the emergence of international regulations on biotechnology and biosafety (Falkner 2000; Newell and Mackenzie 2000) as well as the evolution of particular national and regional systems of regulation (Levidow *et al.* 2000; Gottweiss 1995), there have been few attempts to explore the detailed interactions of the primary actors in the unfolding gene revolution, the biotech companies themselves, with particular systems of regulation. This constitutes a critical gap in our understanding of biotechnology policy processes. Exploring the role of biotechnology and seed firms in the policy process is key to understanding the regulatory approach taken by a government. However much exaggerated the potential has been, biotechnology has come to be regarded as an important tool by which developing country governments can boost economic growth and combat problems of chronic food insecurity. Because of the expertise, economic power and influential policy networks in which biotechnology firms are nested, they have come to play a key role in shaping regulatory developments at the national and international level (Newell and Glover 2003). At the level of implementation of these regulations, firms are expected to act as ‘street-level bureaucrats’ (Lipskey 1980) overseeing compliance with biosafety regulations in particular. This is especially true for many developing countries where capacity for monitoring and enforcing regulations at field level, is particularly lacking.

This paper explores the role of industry groups in the policy process around agricultural biotechnology in India. India presents an interesting prism through which to understand the role of industry groups in biotech policy processes. In global terms, given the size of the country and the symbolic weight its actions carry, what happens in India sends out a powerful message to the rest of the developing world. This is one of the reasons that it has become a key site for biotechnology companies and anti-GM activists alike in the global contest over the future of biotechnology in agriculture. The policy debate about the development and regulation of biotechnology in India is therefore strongly affected by global constellations of interests within the scientific, business and NGO communities. They play out in the Indian policy arena in ways which create challenges and threats to the biotechnology industry which it seeks to confront, accommodate and manage in accordance with the pursuit of its underlying corporate strategies. Within India, a potent combination of a diverse and multifaceted set of industrial concerns, a vocal and mobilised civil society and an interesting set of intra-governmental dynamics interact to produce a quite unique politics of biotechnology. Other aspects of the biotechnology sector in India which help to shed light on the dynamics of firms in the policy process more generally include; the high level of interest from foreign and domestic firms, the differences between and among seed firms, biotech multinationals and smaller “start-up” firms, and the range opportunities that exist for these firms to openly engage the policy process (Newell 2003). Connections between corporate strategies, types of industry mobilisation and levels of influence are easier to observe than is the case for other key developing countries such as China.

The history of attempts to regulate the products of crop biotechnology in India now spans at least 17 years since the Environmental Protection Act of 1986. Almost throughout this process, biotechnology

companies and seed associations have been involved in working with government in the design and implementation of regulatory frameworks that are intended to recognise the commercial potential of the technology as well as safeguard against the environmental and socio-economic risks associated with its development. This paper explores the different corporate strategies of firms in the biotech and seed sectors, how these firms have organised themselves to influence the policy process, and provides an account for the different degrees of influence they have been able to exercise. The approach is to look at the reciprocal relationship between corporate strategy, the public positions adopted by firms and the development of biotechnology policy in India. This allows us to explore the extent to which the policy preferences of leading firms and associations influence the design and implementation of regulations and, in turn, how those preferences are shaped by the corporate strategies of firms in the biotechnology and seed sectors. By analysing influence in these ways, the paper explores the reciprocal links between corporate strategy and policy process. Rather than viewing business interests as homogeneous and monolithic, it suggests the importance of looking at divisions within capital and the political alliances that firms form as a basis for understanding the ways in which policy choices are framed and decisions taken.

The paper first discusses the corporate strategies of the leading business players in the biotechnology and seed sectors. It then looks at how those strategies determine the policy positions of firms and the ways in which they organise themselves into industry associations to represent their interests. Finally, the paper assesses the different strategies of influence that have been adopted by these groupings, looking in particular at the material, institutional and discursive forms of power that they have sought to exercise in debates about the role of biotechnology in Indian agriculture.

## **2 Corporate strategy**

While more than 12 multinational agricultural biotechnology companies now operate in India, in broader historical terms, their arrival is a relatively recent phenomena. The participation of the private sector in agricultural research and development in India has increased slowly since the 1960s. By the end of the 1980s there were still only twelve private sector seed firms in India, focussing mainly on the development of improved hybrids (Dhar 2002). This slow start is in many ways explained by government restrictions on the production of hybrid seeds imposed through a licensing policy which was not relaxed until 1987. Restrictions on foreign companies meant that larger firms, such as Pioneer, either imploded or recast themselves, in Pioneer's case, as ProAgro. In 1989, under the Plants, Fruits and Seeds Order, the import of seeds was freed from government control. The proliferation of this sector of the market took off after the National Seed Development Policy in 1988 which allowed firms based in India that had entered into collaboration with foreign firms to import seeds.<sup>1</sup> In 1988 Monsanto, for example, purchased DeKalb and

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<sup>1</sup> Interview with Dr Venka Reddy, Marketing department, University of Agricultural Sciences (IS).

Cargill so that the Indian subsidiaries of these companies became part of Monsanto's Indian operations (Kneen 2002). As Dhar notes; 'it is quite clear that the period between 1987 and 1989 laid the foundations for the development of a strong private sector seed industry in India during the 1990s' (2002: 12).

The programme of economic liberalisation launched in 1991 served to hasten this process. By loosening restrictions on the activities of foreign firms and multinationals by abolishing licensing in the seed sector, giving automatic approval to foreign technology agreements and to Indian subsidiaries with up to 51 per cent foreign equity, the government facilitated the growth of private sector plant breeding (Seshia 2002). Private sector investment in the seed sector in India more than tripled between 1993 and 1997 to a level of investment of Rs 19,850 million. According to the Seed Association of India, the number of firms with crop improvement programmes went from just 9 in 1987/88 to 34 in 1997/8 in the case of cotton and from 6 to 20 over the same period for maize. In terms of share of the sector, judged by volume of seed sales, the private sector outstripped the public sector in 1996/7 in relation to both sales of maize and sunflower seeds. In some areas, the seed sector continues to be heavily regulated however. Imports and exports of major crops such as wheat and rice remain strictly limited for instance and oilseeds such as cotton and soybean can be imported, but only through agencies specified by the central government (Gupta 2000).

Nevertheless, the National Seed Policy of 2001 seems set to consolidate this pattern of growth within a liberalised economy. Its stated aim is to 'provide Indian farmers with a wide range of superior seed varieties and planting materials in adequate quantities' (Ramakrishna 2003). Manju Sharma, DBT Secretary, claimed that the new seed policy 'will directly promote the seed industry', suggesting that the sector is 'poised for a quantum jump' because of changes in the regulations.<sup>2</sup> Inflated estimates about the future prospects of biotechnology in this new liberalised environment abound. Mayhco's joint director of Research and Development, Dr Usha Zehr, claims that India has the potential to position itself as a key market for biotechnology products given the saturation of European and North American markets, as well as a key exporter of products like cotton, Rs 35,000 crore of which was exported in 2000/2001.<sup>3</sup> The extent to which this potential will be realised will depend strongly on where the leading biotech companies perceive their interests to lie which, in turn, reflects their corporate strategies.

In looking at the biotech sector in India, the first point to note is that there are many important differences between the firms with regard their role in the "gene revolution" and the public positions they adopt regarding the regulation of biotechnology products. In many ways this is a function of their distinct corporate strategies which engender differences of opinion between firms, for example, over Intellectual Property Rights and the protection of plant varieties, as well as issues such as commercial confidentiality and the nature of biosafety regulation. Many smaller seed companies, even openly question the role of biotechnology in India's agricultural development, raising concerns about impact on seed markets or the

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<sup>2</sup> Address to closed seminar on 'Agricultural biotechnology: The need of the new millennium', 9 April 2001, New Delhi.

<sup>3</sup> Presentation at seminar on 'Agricultural biotechnology: The need of the new millennium', 9 April 2001, New Delhi.

suitability of GM crops for the nature of agro-ecological conditions in India. Others are critical of the hype about biotech as a magic bullet to address India's food security, and the priority that has been attached to the technology, describing it as a "fashion".<sup>4</sup>

Compared with the green revolution, where trust in public sector scientists was high and the negative environmental impacts of the technologies became apparent only slowly, the gene revolution has started on a more cautious footing (Seshia and Scoones 2003). In India, high levels of civil society engagement and scepticism towards scientists, government and industry combine with both highly uncertain and disputed risks and benefits associated with biotechnology, to make for a more challenging operating environment. This has not, however, dissuaded leading firms from setting up operations in India as a country that boasts a major potential domestic market for agricultural goods.

MNCs that operate in India include Monsanto, Syngenta, Du Pont and Aventis. These firms are characterised by large biotech portfolios, access to elite science and sophisticated public relations strategies. Monsanto is the most high profile of these and maintains the largest presence in India. Monsanto operates a research centre in Bangalore at the Indian Institute of Science (IISc) that has become a magnet for protests against GM development. As early as 1990, Monsanto sought approval for the commercial release of its Bt cotton variety. This was rejected in 1993 on the basis that the technology transfer fees were too high. In 1995 Mayhco, the long established seed company headed by Dr Barwale, was granted permission to import 100g of transgenic cotton seed as part of an agreement with Monsanto. To consolidate its position in the market, in 1998 Monsanto bought a 26 per cent stake in MAHYCO (Maharashtra Hybrid Seed Company) creating Mayhco-Monsanto Biotech India Ltd (MMB). This was seen by many as an astute strategic move given that Mayhco's director Dr Barwale is a well respected member of the Indian agricultural industry who has been honoured by the Indian government for his contributions to the agricultural sector (Gupta 2000). His connections within government extend beyond the Department of Biotechnology (DBT) to many of the key agencies involved in biosafety regulation. Scoones (2003) cites a representative from IISc who notes; 'Monsanto was clever linking up with MAHYCO. It is a big and well established company and Barwale is well respected'. In March 2002 MMB's Bt cotton was approved for commercial release for a three year trial period in six states subject to a series of conditions (Dhar 2002).

Monsanto maintains a "regulatory affairs" office of its own in Delhi to engage in routine interactions with government officials over policy development. The company has also adopted a range of public relations strategies to promote the benefits of biotechnology. Newspaper adverts, open days, videos and workshops have all been used to woo a sceptical public. Public surveys demonstrating support for the technology have been funded and created platforms for those farmers' leaders such as Chengal Reddy of the Andhra Pradesh Farmers' Association, in favour of GM crop development in India. Monsanto has also led attempts to get media publicity for the views of biotech-advocate NRIs (Non-Resident Indians)

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<sup>4</sup> Interviews with seed company representatives, 5 April 2001.

such as C.S. Prakash from Tuskegee University in the US who has made several high-profile visits to India. The epicentre of this national push is the company's "government and public affairs" department based in Mumbai.

On the research side, Monsanto has sought to build bridges and create legitimacy for its activities through collaborations with public sector institutes. One example of this would be the companies' collaboration with the respected research organisation TERI (The Energy and Resources Institute) and Michigan State University.<sup>5</sup> With funding from USAID, the idea is to develop a "golden mustard" that will yield cooking oil high in vitamin A. It is claimed Monsanto had no interest in taking through to commercialisation what is regarded as a "humanitarian crop"<sup>6</sup> aimed, industry sources insist, at 'helping hundreds of thousands of children suffering from vitamin A deficiencies' (AIBA 2000b). Besides the PR benefits that the firm derives from such collaborations, alliances with groups such as TERI also serve other politically important functions. TERI has hosted a number of "stakeholder dialogues" on biotechnology and biosafety issues bringing together a select number of researchers, NGOs such as Gene Campaign, and firms such as Monsanto and Syngenta to produce recommendations for government advocating clarity on approval procedures and reduced approval times.<sup>7</sup> To the extent that the recommendations come from a broader, though selective, group of actors in the debate than industry alone, they help to validate industry arguments that there exists cross-sectoral support for biotechnology in India. Associating with TERI also opens up other indirect channels of access because the institute is represented on all DBT committees and so enjoys a high level of access to government decision-making on these issues.

Monsanto has had to engage in such public-political strategies to a greater degree than other companies because of the particular fire that its activities have drawn from activists. The farmers' group KRRS (Karnataka Rajya Ryota Sangha) in Karnataka for example led a campaign in November 1998 to "Cremate Monsanto", burning the company's field trial sites in the state. The company has also faced allegations of engaging in "biopiracy" from prominent activist Vandana Shiva of the Research Foundation for Science, Technology and Ecology, as well as legal actions from the group Gene Campaign headed by Suman Sahai. It is clearly the case then that in India, as elsewhere, because of its level of commitment to biotechnology development, as well as its high profile public relations work, Monsanto has found its activities subject to greater critical public scrutiny than many other companies who are prepared to let the company front the public defence of biotechnology on their behalf.

That said, many companies feel aggrieved at the public-political strategies that Monsanto has adopted, because they believe that they have resulted in damaging repercussions for the sector as a whole. Monsanto stands accused by activists and some of their industry counter-parts, of rushing the approval process and riding roughshod over public concerns about the technology. Activists have claimed that

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<sup>5</sup> TERI was known until very recently as the Tata Energy Research Institute.

<sup>6</sup> Interview with Vibha Dhawan, TERI, 29 March 2001.

<sup>7</sup> Interview with Vibha Dhawan, TERI, 29 March 2001.

‘Monsanto treated India like a banana republic’.<sup>8</sup> This is in addition to rumours of illegal trials being undertaken with the company’s full knowledge and of the use of the controversial “terminator” technology. In the latter case, confusion was generated by the fact that the trials of Bt cotton coincided with the timing of the terminator controversy on the global stage. For Monsanto this episode critically ‘damaged their relations with cotton-growing farmers’ according to their director of Regulatory Affairs in India R.D.Kapoor.<sup>9</sup> The company was forced to issue a “Statement in the Public Interest” in national newspapers clarifying that the company had not used, and had no plans to use “terminator” technology in India (Gupta 2000). Many industry players are critical nevertheless of Monsanto’s “unnecessarily aggressive and insensitive” strategy in India. While acknowledging that events in Europe have also had an impact on the progress of biotechnology in India, a member of a seed association said that ‘Monsanto is doing biotechnology great damage . . . it has set things back by one decade’. Even smaller start-up firms are keen to distance themselves from Monsanto who they claim, ‘through not being straight with DBT . . . have muddied the waters and damaged things for the rest of us.’

There has been a discernible shift in the political strategies of many firms in the wake of this series of controversies. Officials from other firms profess to have learnt from Monsanto’s experience. Many firms now advocate more gradual, less public and less controversial routes to biotechnology research and development. Companies such as Pro-Agro that are awaiting the approval of a GM mustard variety<sup>10</sup> have adopted a lower profile presence in the debate, seeking to avoid the political and economic costs that Monsanto incurred. This may be wise given that the company’s crop may attract high levels of public scrutiny because mustard oil is consumed as a food (Scoones 2003). Other multinationals such as Syngenta have also kept a relatively low profile in the Indian biotech debate, preferring to use India as a base for pesticide production where costs are lower, through Syngenta Crop Protection.<sup>11</sup>

Monsanto’s experience has not served to deter companies such as Du Pont from expanding their biotech portfolio in India, however, through proposed tie-ins with the Reliance group, run by the infamous Indian entrepreneurs, the Ambani brothers, as part of a broader concentration on joint research on biotech crops and crop protection products.<sup>12</sup> Major food companies such as Nestlé India are also looking to develop biotech projects, supported by the company’s own “Life Ventures” capital fund which has 150 million Euros to invest in ‘health enhancing food and agricultural biotechnology’.<sup>13</sup>

Alongside the MNCs, there are a number of large Indian seed companies with some interest in biotechnology. These include companies such as Rallis and Indo-American Hybrid Seeds. These remain seed companies in a traditional sense, with a strong history of plant-breeding and important experience in

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<sup>8</sup> Interview with leading activist, New Delhi, 5 May 2001.

<sup>9</sup> Interview with R.D.Kapoor, Head of Regulatory Affairs, Monsanto India, 4 April 2001.

<sup>10</sup> The company is awaiting the approval of three GM mustard seeds developed in collaboration with Aventis and PGS Belgium.

<sup>11</sup> ‘Syngenta to make Indian plant its global hub’, *Economic Times*, 23 September 2002: 10.

<sup>12</sup> ‘DuPont targets 30 per cent growth’, *The Hindustan Times* (8 February 2003: 19); ‘Du Pont plans biotech foray in India’, *Economic Times* (10 February 2003: 9); ‘Du Pont eyeing biotech, agri and fuel cell biz in India’ (*Financial Express*, 8 February 2003: 1); ‘Du Pont mulls large scale Indian exposure’ (*Economic Times*, 9 July 2002: 9).

<sup>13</sup> ‘Nestlé scouts for biotechnology projects’ (*Business Line*, 18 March 2002: 7).

tissue-culture and other “lower” tech biotechnology innovations. Though as yet they have developed little in the way of transgenics, they are courting biotech tie-ins with companies such as Avesthagen<sup>14</sup> and have registered interest in the production, sale and marketing of hybrid seeds.<sup>15</sup> Companies such as Rallis remain attractive to larger biotechnology companies because of their extensive distribution network. Rallis hybrid seeds, for example, has joint venture arrangements with Cargill on sunflower, sorghum and maize.<sup>16</sup> It is the reputation, access and effective delivery systems that global firms are seeking from companies such as Rallis and Indo-American Hybrid Seeds.<sup>17</sup> They, in turn, work with small traders such as Green Seeds Pvt, for example, who distribute seeds for Indo-American, ProAgro and Rallis.<sup>18</sup> Referring to his company’s tie-in with PGS on the distribution side of the supply chain, one seed trader said, ‘We can be in their chain, but we can’t compete’.<sup>19</sup> Some smaller seed companies nevertheless view these tie-ins positively where there are synergies with existing seed production activities and indeed have visited Europe and the US searching for contacts for new commercial ventures.<sup>20</sup> Likewise multinationals are interested in joint ventures with local firms, to boost their credibility as legitimate players in local markets and to tap both the trust that local seed firms have built up with farmers and their understanding of the regulatory environment. A.R. Modi from Oriental Biotech in Bangalore noted ‘our strategic advantage is that we know the agricultural system and have the political contacts . . . [as well as] 1,500 growers loyal to us that will accept any crops we give them’.<sup>21</sup> A former employee of Pioneer, for example, said although the company entered India in 1974, they spent ‘15 years stumbling around trying to understand the laws’. To remedy this they sought a joint venture with a company in Chennai, in a 50/50 ownership deal.<sup>22</sup>

Companies such as ProAgro India, the second largest seed company in India, have been able to form alliances with larger firms such as Aventis crop science whilst remaining a separate holding and not being integrated with the multinational.<sup>23</sup> While being part of a global “life science” company, ProAgro maintains a degree of autonomy and retains its brand name, but through alliances with partners in Europe is able to access gene constructs that would otherwise not be possible. As with other multinationals, basic research on transgenics is undertaken in western labs, in ProAgro’s case in the Netherlands (Scoones 2002). Nevertheless, such alliances have brought about changes in the way firms such as ProAgro operate, such that activities such as research and development, seed production and seed distribution, that were

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<sup>14</sup> ‘Tatas may bring Rallis under chemical arm’ (*Chemicals Purchase*, February 2003, Vol 1 Issue 12: 56). ‘Rallis in talks with Avesthagen for biotech foray’ (*Chemical Weekly*, 9 April 2002, Vol 47 Issue 33: 117).

<sup>15</sup> ‘Rallis weighs seeds foray’ (*Business Standard*, 8 April 2002: 4).

<sup>16</sup> Interviews with Dr V.R. Patil, Head Biotechnology at Rallis and Dr M.S. Mithyantha, Vice-President of Research and Development at Rallis (IS).

<sup>17</sup> Interview with Dr. Manmohan Attavar, Bangalore, 10 May 2001.

<sup>18</sup> Interview with Jagal Kishor, Director, Green Seeds Pvt Ltd, 6 April 2001.

<sup>19</sup> Interview with Iswar Bahuja, Puhaja seeds Ltd, 5 April.

<sup>20</sup> Interview with A.R.Modi, Oriental Biotech Limited, 8 May 2001, Bangalore.

<sup>21</sup> Ibid.

<sup>22</sup> Interview with Madan Khunnah, Cosmo Plantgene, 6 April 2001. As of January 2001, the company owned 100 per cent of SPIC-Chennai.

<sup>23</sup> Interview with Dr Agnadi, Research and Development, Biotechnology ProAgro (IS). In 1999 Hoescht (AgrEvo) took over the Dutch holding company of the ProAgro group and since then has been merged with the major life science major, Aventis.

once separate, are now increasingly consolidated. For more powerful players such as Du Pont, the deal may be different; the company has a longer history of operating in the country and advanced marketing skills which mean they 'don't need hand-holding by local partners'.<sup>24</sup> Foreign firms can buy firms for their germplasm then use it to develop transgenics like Bt cotton, taking adapted hybrids and inserting a gene to add value.<sup>25</sup> Alternatively, rather than establish formal tie-ins, some firms prefer to set up licensing arrangements with seed companies for the use of their transgenic technologies.

There is a tension, however, between firms with interests in biotechnology and those whose core concerns lie in the production of chemicals for agriculture. Leading biotech companies in India have insinuated that delays in approvals of their products are in part down to the lobbying of pesticide companies that stand to lose from biotechnology on the grounds that GM varieties may require fewer applications of pesticides. Many advocates of biotechnology in India even go as far as to claim that the NGOs voicing concerns about the technology are mere front groups for the chemical industry that it is alleged provides the organisations with funding. The picture is complicated by the fact that some firms have joint interests in biotech development and the pesticides and fertiliser market, such as Rallis, based in Bangalore. Besides distributing seeds for Cargill and Monsanto, Rallis maintain their core interests in pesticide and fertilizer production for which they own a 17 per cent share of the market in India.<sup>26</sup> They see their role as an integrated agrochemical company involved in pesticide and fertilizer production but with interests in biotechnology, particularly virus-resistant crops. Given a long history of working on chemicals and pesticides, such firms are much more cautious in their embrace of biotechnology. They are keen to hedge their bets, knowing that while pesticide markets may be showing some decline, there is still enormous demand for these products which continue to form the core of Rallis's business. This strategy means that they will be well placed to exploit whichever markets expand most rapidly. As Vice-President of Research and Development at Rallis, M.Smithyantha put it, 'chemicals are down, biotech is up, the trend is set and we have to be on board'.<sup>27</sup>

Beyond the rhetoric, however, many acknowledge the difficulties associated with a serious investment in biotech research. Companies such as Rallis and Indo-American have to hire equipment to analyse gene sequences from bodies such as IISc in Bangalore.<sup>28</sup> The capacity issues for such firms include not only resources and access to gene sequences, but ability to compete for highly-skilled staff with companies like Monsanto, as well as organisational constraints within the firm where research and development is poorly integrated with production, for example. Where collaboration between these firms and multinationals is sought on biotechnology products of primary commercial importance, progress can be inhibited by the demands of multinationals for patent protection, however. Such concerns also change the way long-established firms such as Rallis operate, particularly in terms of scientific cultures within the

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<sup>24</sup> Op.cit 22.

<sup>25</sup> Op.cit 22.

<sup>26</sup> Interview with M.S. Smithyantha, Vice-President Research and Development, Rallis, Bangalore, 11 May 2001.

<sup>27</sup> Ibid.

<sup>28</sup> Interviews with Dr Ramanujan (scientist), Dr B. Dutta (Biotech Science Officer), Dr V.R. Patil (Head Biotechnology Division), Rallis, Bangalore, 11 May 2001.



firm, when openness and information sharing is restricted and access to gene sequences, essential to research development, becomes more difficult. The result is that companies have to manoeuvre carefully to avoid patent clashes.<sup>29</sup>

In terms of financing for their work, firms such as Rallis are protected by belonging to the Tata group of industries which provides a “buffer to absorb the loss,”<sup>30</sup> in contrast to their start-up competitors that are dependent on venture capital. Few firms enjoy this security and level of portfolio flexibility, where in Rallis’s case for example, avenues of research in tissue-culture, transgenics and molecular lines are being explored simultaneously. If more advanced forms of biotechnology application were not to take-off, a resort to more traditional tissue-culture applications would still be possible. Firms such as Indo-American, however, are vulnerable to being bought up by larger multinational firms. If India continues to be seen as a potentially important strategic market for multinationals, these firms with established reputations for quality seeds, extensive distribution channels in place and good government connections, make an attractive prospect for potential buyers.

Beyond these firms, there is a smaller, but significant, group of start-up firms such as Avesthagen and BioCon, as well as outfits with close links to universities such as Strand Genomics which is run by scientists at Bangalore’s IISc. Strand Genomics developed with funds from local venture and angel investors (principally local entrepreneurs and NRIs in this case) and is rated as one of the top 5 companies in the bioinformatics sector.<sup>31</sup> Avesthagen was founded by Viloo Patel with the backing of major banks such as ICICI and a loan from the Global Trust Bank.<sup>32</sup> These are newer firms, often dependent on venture capital and technology support from groups such as Biotech Consortium India<sup>33</sup> and with little independent capacity for production, instead often being involved in contract research which is outsourced from larger biotechnology concerns.<sup>34</sup> They are involved, for example, in trait identification and screening work for companies, using tools for the prediction of gene sequences or marker-assisted selection and bioinformatics.<sup>35</sup> BioCon, founded by Muzumdar-Shaw in 1978, and therefore with a longer history than many such firms,<sup>36</sup> continues to focus on conventional work such as the provision of enzymes to the brewing and bread industry. The start-ups are assisted in terms of resources and profile by an influential community of NRI’s. For example, the K-GANGA (Karnataka Global Advisory Network Group on Agriculture) umbrella group, convened by C.S. Prakash and backed by the state government of Karnataka, was formed to bring together biotechnologists from Bangalore working overseas sharing common views about the benefits of biotech for India (Visvanathan and Parmar 2002). The Indus Entrepreneurs (TIE) group performs a similar function. Made up of NRI entrepreneurs, TIE has set up a

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<sup>29</sup> Patil *et al.* Rallis *ibid.*

<sup>30</sup> Interview with M.S. Smithyantha, Vice-President Research and Development, Rallis, Bangalore, 11 May 2001.

<sup>31</sup> ‘The right genetics’ (*Business World*, 21 October 2002: 46).

<sup>32</sup> Viloo Patel, CEO, Avestigen, Bangalore (IS).

<sup>33</sup> ‘BCIL to set up VC fund to finance its activities’ (*The Asian Age*, 5 October 2002: 14).

<sup>34</sup> Interview with Dinesh Joshi, Avestha Gengraine Techs Pvt Ltd, Bangalore, 10 May 2001.

<sup>35</sup> ‘Avestha Gengraine technologies: Technological excellence’ (*Fortune India*, 15 July 2002: 45).

<sup>36</sup> ‘Biotech: The third wave’ (*Outlook*, 4 January 2002: 98).

biotech group that has identified twenty venture capital firms looking for investment opportunities in the Indian biotech sector.<sup>37</sup>

Some companies provide the raw material for the work of overseas biotech enterprises in Europe and the U.S. Bangalore Genei exports enzymes for genetic engineering research, for example.<sup>38</sup> This sort of contract work is, in many ways, their niche. They are at the high tide of innovation and will sink or swim with the biotech current because without core and established business concerns of their own, they necessarily operate in the uncertain “futures market” of biotechnology. *Economic Times* journalist, Narendar Pani notes, for example, the way venture capital lost interest towards the end of the 1990s, but that gene mapping has served to revive interest, though largely in biotech pharmaceuticals at this stage, where the strong “commercial acumen” resides.<sup>39</sup> This view is supported by a Confederation of Indian Industry study on the financing of biotech enterprises in India which found that less than 20 per cent of venture funds preferred to invest in agricultural biotechnology and genomics as opposed to biopharmaceuticals and bioinformatics.<sup>40</sup> In 2002 ICICI also dropped its plans for a \$25 million “Biotechnology Incubation Fund” citing ‘inadequate potential in the sector and the long-run cycles involved’.<sup>41</sup>

The role of venture capital then is key in this sort of capital-intensive work where high costs are involved, especially for service-oriented firms working on bio-informatics for example.<sup>42</sup> Venture capital firms, whom these smaller entrepreneurial outfits depend upon, seek a short-term return on their investments. This explains the importance that “start-up” firms attach to forms of intellectual property protection. For example BioCon holds 35 patents on its work.<sup>43</sup> The company, together with Strand Genomics, have courted the idea of a partnership to develop intellectual property protection for their bio-marker research.<sup>44</sup> The need to secure IPR protection has drawn a company like Avesthagen into the policy process, where legal experts represent the company on committees. Rather like the larger life-science outfits, they also express concerns about issues of commercial confidentiality in the reporting of lab-level biosafety studies to government.<sup>45</sup>

The financial vulnerability of the start-ups means they are more directly and immediately affected by the politics which surround the technology’s perceived popularity than some of their larger counter-parts. Concerns about burdensome government regulations and about public opposition to GMOs serve to temper the enthusiasm of venture capitalists about the potential of the technology to deliver high commercial returns. Equally, positive signals from government help to create a conducive environment for new investment in the sector. This is why biotech entrepreneur Kiran Muzumdar-Shaw, head of

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<sup>37</sup> ‘TIE to promote biotech sector’ (*Deccan Herald*, 14 January 2002: 12).

<sup>38</sup> Dr P. Babu, CEO Bangalore Genei. Also, ‘Bangalore Genei plans foray into biology contract research’ (*Express Pharma Pulse*, 25 July 2002: 1).

<sup>39</sup> Interview with Mr Pani, *Economic Times*, 8 May 2001, Bangalore.

<sup>40</sup> ‘Biotech sector saw Rs250 crore private investment till 2002’ (*Business Standard*, 7 February 2003: 2).

<sup>41</sup> ‘ICICI venture in revamp’ (*Economic Times*, 17 July 2002: 6). ‘VCs fighting shy of bio-sector:CII’ (*Deccan Herald*, 13 June 2002: 13).

<sup>42</sup> Interview with Prof V.J. Chandra, Managing Director, Strand Genomics, Bangalore (IS).

<sup>43</sup> ‘Biocon venture with Cuban company hits FIPB hurdle’ (*Business Line*, 2 January 2003: 1).

<sup>44</sup> ‘Strand, Biocon may jointly develop IP’ (*Financial Express*, 14 February 2002).

<sup>45</sup> Interview with Dinesh Joshi, Avestha Gengraine Techs Pvt Ltd, Bangalore, 10 May 2001.

BioCon, reacted to the approval of MMB's Bt cotton variety in March 2002 by suggesting that 'With the right policy signals such as stem cell research and the commercialisation of Bt cotton, global venture capitalists will now be more inclined to invest in the Indian biotech industry'.<sup>46</sup> Unlike the major biotech MNCs that can afford to take a longer-term perspective on innovations, markets and regulatory developments,<sup>47</sup> "bio-entrepreneurs" such as Viloo Patel and Dinesh Joshi have continually to "woo" venture capital firms.<sup>48</sup> Assessments are made of companies regarding their commitment, track-record and potential. Since banks and other investors got their "fingers burned" when the information technology bubble burst, they are more cautious with the hype around Bt and less bullish in their outlook.<sup>49</sup> Ghanshyam Dass, of NASDAQ Bangalore, claims that many venture capital firms still lack an understanding of the financial potential of biotechnology. In other countries, such as the US, this has been resolved through assurances from larger firms, assurances that smaller firms in India cannot provide. Some larger seed companies in India have been well placed to seek out venture capital, however, such as Indo-American Hybrids whose director Dr. Manmohan Attavar sits on the board of the venture capital fund, UTI (Unit Trust India).<sup>50</sup> UTI has a technical committee to assess likely returns that can be lobbied and persuaded of positive financial gains, but UTI is seen as an exception to the many venture capital firms that lack scientific expertise.<sup>51</sup> Given the importance of this type of funding, the DBT has sought to develop a National Biotechnology Venture Capital Fund for biotech entrepreneurs working on smaller-scale projects and the government of Karnataka, in association with the Vision group, has plans to set up its own Biotech Venture Fund.<sup>52</sup> This sort of "angel" investment accounts for only a fraction of the investment in biotech however, compared with private venture capital investments in India.<sup>53</sup>

Though small in global financial terms and subject to the whims of investors, these start-ups represent an important part of the overall puzzle and are used symbolically to highlight the commercial success that biotechnology can bring to India. In this sense, their profile in policy debates currently outstrips their material contribution to the Indian economy (Scoones 2002). The projected success of these companies has also been used to lever political influence, with Viloo Patel being part of the Vision group on biotechnology created by Karnataka's Chief Minister in February 2001 and a member of the Karnataka State Board for the Development of Technology. The profile that bio-entrepreneurs such as Viloo Patel and Kiran Muzumdar-Shaw enjoy also helps to attract international investment from groups such as American International and Gary Wendt capital that have sought to buy out ICICI's 10 per cent

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<sup>46</sup> *The Hindu*, 28 March 2002.

<sup>47</sup> Interview with Dr P. Babu, Managing Director, Genei Pvt Ltd, Bangalore, 14 May 2001.

<sup>48</sup> Interview with Dinesh Joshi, Avestha Gengraine Techs Pvt Ltd, Bangalore, 10 May 2001.

<sup>49</sup> 'Private funds keep off biotechnology firms' (*Business Standard*, 26 November 2002: 9).

<sup>50</sup> Interview with Dr Manmohan Attavar, Bangalore 10 May 2001.

<sup>51</sup> Interview with Dr P. Babu, Managing Director, Genei Pvt Ltd, Bangalore, 14 May 2001. Many overseas venture capital firms such as Ivesco Private Capital and IQ Bridge Capital from the UK to use Indian accounting firms to assess the creditworthiness of biotech start-ups. ('VC firms warming up to Indian biotech' *Economic Times*, 8 February 2003: 16).

<sup>52</sup> 'DBT's venture capital fund fails to take off' (*Economic Times*, 27 March 2003: 12); 'Karnataka plans to set up Biotech venture fund' *Economic Times*, 18 April 2002: 5).

<sup>53</sup> 'South India likely to emerge as key biotechnology player' (*Economic Times*, 13 March 2003: 9).

venture stake in BioCon India.<sup>54</sup> The fact that multinational companies are accused by some of trying to frustrate the development of biotech products by Indian companies by questioning the effectiveness of the products as well as their safety and the adequacy of tests undertaken to assess that safety, may be testimony to their growing success.<sup>55</sup>

### 3 Getting organised

This section looks at how the firms described in the section above have organised to represent their interests in India's policy debate on biotechnology and biosafety. While there are some areas of common concern, there are many differences in position between the key national associations active in the debate. These relate quite strongly to the distinct corporate strategies that firms have adopted, surveyed above. This section also discusses briefly the role of state-based industry associations in Karnataka to provide an illustration of the nature of links between state level industry associations and the formulation of biotech policy at the national level. What then follows is an exploration of the ways in which these national and state-level bodies are nested within and connected to global industry bodies and coalitions.

#### 3.1 The seed industry

There are several industry groupings that serve to support the seed industry in India. The two most prominent are considered to be the Association of the Seed Industry and the Seed Association of India. Protecting traditional plant-breeding and securing access to seed technologies at affordable prices are the sort of issues that preoccupy their membership. The Association of the Seed Industry has, for example, called on the government to provide a financial package to support traditional plant breeding and biotechnology research as well as develop a global strategy for sourcing seed technologies at affordable prices for farmers.<sup>56</sup> ASI was set up in 1992 as a pro-active forum 'for the Indian seed industry to face the challenges of the globalisation of Indian agriculture' (ASI 2001). Represented on the association's board are key players in the seed industry including Dr Manmohan Attavar of Indo-American Hybrid Seeds, R.B. Barwale of Mayhco as well as senior figures from Rallis and Nath seeds. Both ASI and SAI are active members of the International Seed Federation that represents a forum for the discussion of issues of interest to the global seed industry (ISF 2003). ASI is also a member of Assocham and CII, discussed below. On the national stage in India, however, it is SAI that has been more prominent in debates about biotechnology development and therefore discussion here will focus on that body.

**SAI.** The Seed Association of India has been active on biotech issues (broadly conceived) for a lot longer than either the Confederation of Indian Industry (CII), which only became active once the larger biotech firms became interested in modern biotechnology, and the All India Biotech Association (AIBA) which was formed to capitalise on the commercial potential of new innovations in biotech in the

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<sup>54</sup> 'AIG, GW may buy out ICICI venture in BioCon' (*Economic Times*, 14 December 2002: 1).

<sup>55</sup> 'MNC-Swadeshi battle in biotech' (*Business Standard*, 15 February 2002: 1).

<sup>56</sup> 'Seed growers want technology mission for sector' (*Business Standard*, 21 December 2002: 5).

agricultural and pharmaceutical sectors.<sup>57</sup> SAI was formed in 1982 in order to provide inputs into the development of the new seed regulations. It has participated in national debates about the seed sector ever since, including active engagement with debates about the New Seed Law of 2001 through the Seed Policy Review Group. The association represents a combination of older seed companies such as Indo-American Hybrid Seed and a selection of companies with links to multinationals such as Mahyco. These more established firms consider their interests to be well represented by SAI, perhaps unsurprising given that two members of the association worked for Rallis for forty years.<sup>58</sup> The bulk of its membership comes from the South of India in cities such as Bangalore and Hyderabad where production is concentrated, even if the trading arm of the companies maintain a presence in Delhi. The group claims to deal more in the problems of smaller traders regarding seed regulations, for example, which differ by state and variety, adding to the burden of smaller firms, and issues such as corruption in certification processes, where dealers and labs are said to be in cohorts, “acting like a mafia” as one seed trader put it. For this reason individuals like Dr. Manmohan Attavar, head of Indo-American Hybrid Seeds, that come from a more traditional plant-breeding background, align themselves politically with the SAI rather than the CII.

Despite this history, SAI shares with associations representing the larger players in the market a concern with the speed of approvals and certification for new hybrids which are described as ‘out of date by the time you get certification from government inspectors’.<sup>59</sup> There is also a shared frustration with burdensome regulations that frustrate the growth of the sector which claims to be subject to 16 separate laws of the GoI.<sup>60</sup> The comment of Dr. Barwale, President of the Association of Seed Industries that ‘We will bear the process, but please don’t let it break us’ seems to capture the fears of many companies that excessive regulation could cripple the performance of their business.<sup>61</sup> This is a complaint extended to biosafety and labelling regulations. According to Arvind Kapur of ProAgro-PGS India, the costs of meeting safety assessments are now so prohibitive that many firms are asking “why bother?” It becomes difficult to keep production costs low in the face of hidden costs from regulation, the demand for more studies and product delays. Referring to calls for rules on labelling and segregation, Kapur claims ‘Industry can’t afford these legal frameworks’.<sup>62</sup> Pro-Agro is also part of the AIBA and the interventions of Kapur clearly echo the appeals made by that organisation and the CII for a time-bound, one-stop approval process (see below).

On issues directly impinging on the seed industry, the SAI enjoys close relations with the Ministry of Agriculture, and has access to most of the committees hosted by that Ministry dealing with issues such as import clearances, export and quarantine fees and plays an active part in the Seed Policy Review Group. The association claims to have a lot of influence with the Ministry of Agriculture where their suggestions

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<sup>57</sup> Interview with Dr Kataria, Seed Association of India, 27 March 2001.

<sup>58</sup> Interview with M.S. Smithyantha, Vice-President Research and Development, Rallis, Bangalore 11 May 2001.

<sup>59</sup> Interview with seed company representative, 6 April 2001.

<sup>60</sup> Presentation by Arvind Kapur, Pro-Agro-PGS India Ltd at seminar on ‘Agricultural biotechnology: The need of the new millennium’, 9 April 2001, New Delhi.

<sup>61</sup> Intervention at the seminar ‘Agricultural biotechnology: The need of the new millennium’, 9 April 2001.

<sup>62</sup> Ibid.

are adopted 'at least 90 per cent of the time' according to a senior SAI spokesperson. The channels of access are used to raise broader concerns their members have about the lifting of quantitative restrictions on imports and the dumping of agricultural produce on the Indian market through under-cutting prices.<sup>63</sup> There have been calls to maintain duties to protect Indian agriculture given high production costs in the country and the threat posed by cheap imports of products such as wheat, sunflower, soybean and palm oil. While accepting that some liberalisation is inevitable, SAI have called for more gradual forms of liberalisation and the sequenced lifting of restrictions in order to allow some adjustment time.<sup>64</sup> The national outcry over the farmer suicides in many states in India lent credence to the urgency of calls to support farmers struggling to compete in the new environment.<sup>65</sup>

Individual seed enterprises also interact regularly with the Ministry of Agriculture in their own right, despite claiming to be content with the way in which the SAI represents their concerns to government.<sup>66</sup> Sometimes the initiative comes from government itself, for example, in the form of organised seminars on topics of interest to the seed industry or to explain changes to regulations that affect their sector. On other occasions these will be hosted by a body such as the Association of the Seed Industry, such as the one organised on 9 April 2001 on 'Agricultural biotechnology: the need of the new millennium' at which P.K. Ghosh from the DBT and Dolly Chakrabarty of MoA spoke and Manju Sharma, then DBT Secretary, gave the keynote speech to a closed audience of seed and biotech industry representatives. The fact that such senior figures were persuaded to attend the meeting is an indication of the association's clout with government.

SAI have also been active on issues of plant variety protection and intellectual property rights, where leading personnel express some scepticism about the need for stronger forms of IPR protection, despite the organisations public position, albeit not a forthright one, in favour of strengthened protection. One senior member said that the drive for a "quick-buck" was threatening the sharing of knowledge and innovation. He argues that the "false cry" for IPRs will slow down the development of biotech in India and that, in any case, many proposed systems of IPR protection would be unenforceable.<sup>67</sup> Others express scepticism about the ease with which patent protection can be acquired for minor innovations which are "basically pirated" as one seed trader put it. There are currently estimated to be only 20 companies in India with proprietary hybrids and MNCs tend to only want to work with firms that have access to proprietary germplasm.

Nevertheless, many seed firms place great emphasis on the need for plant variety protection to prevent replication by farmers, even if they acknowledge, in principle, the farmers' right to seed saving and exchange. Divergences between seed companies about the priority that should be attached to crop protection and to market liberalisation and relaxation of controls on foreign ownership reflect their

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<sup>63</sup> Interview with Iswar Bahuja, Puhaja seeds Ltd, 5 April 2001.

<sup>64</sup> Interview with Dr Manmohan Attavar, Bangalore, 10 May 2001.

<sup>65</sup> 'A farm crisis and suicides' (*Frontline*, Volume 18 Issue, 14–27 April 2001).

<sup>66</sup> Interview with Narender Kumar Chugh, Heritage Seeds, 5 April 2001, Delhi.

<sup>67</sup> Interview at SAI, Delhi, 27 March 2001.

market positionality within India and globally and the extent to which they engage in primary research. The eclectic nature of SAI's membership means that it is a broad church and has to accommodate the divergent interests of MNCs and small seed traders simultaneously. Despite being part of the government committees that address biosafety issues, SAI do not advocate strong positions on these issues. Most biotech firms do not attribute much influence to the seed firms on the specific issues associated with biotechnology.

In terms of global profile, as noted above, SAI also interacts with counterparts at the international level through the International Seed Federation that resulted from the merger in 2002 of the International Seed Trade Federation (FIS) and the International Association of Plant Breeders (ASSINEL). Indo-American describes itself as the most internationalised player in the Indian seed market in this regard where the company's director, Dr. Manmohan Attavar, sits on the Executive Committee of the International Seed Trade Federation (FIS), now part of ISF. Through being part of a global seed industry association, SAI and its members come to be involved in global public debates about the additional costs associated with the trade in LMOs that may derive from both the CPB (Cartagena Protocol on Biosafety) and its Advance Informed Agreement (AIA) and notification requirements as well as regional legislation on labelling and traceability. For example, the European Commission has also proposed a policy on labelling and traceability which requires complete traceability of a product back to a particular producer from any stage in the supply chain (COM 2001). Where exporters are unable to provide adequate documentation themselves, extra testing of products may be conducted by EU importers, potentially increasing delays and adding to the costs of producers. Such measures may have an impact on the market ambitions of larger Indian firms and so voicing concerns alongside other commodity traders through global seed associations represents another important channel of political activity. Reflecting these concerns, ISF has called on developers of GM traits to make available to seed companies the necessary technology for testing the presence of GM ingredients (ISF 2002).

### **3.2 The biotech industry**

Unlike the SAI, the **AIBA** (All India Biotech Association) has a much shorter history. Established in 1994, the association represents a smaller number of multinational and Indian agribiotech and pharmaceutical companies in a more promotional capacity.<sup>68</sup> AIBA, for example, organised the 'Biotech Invest 2003' conference at which memorandums of understanding were signed with foreign companies, mainly in the area of biotech pharmaceuticals.<sup>69</sup> AIBA's long term aim is to establish itself as a 'strong and vibrant organisation to serve biotechnology in India comparable to similar bodies already existing in various European countries, Japan and USA' (AIBA 2000b).

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<sup>68</sup> AIBA has 115 members made up of three categories including (i) companies (ii) research and development organisations (iii) individuals and associates.

<sup>69</sup> 'Rs100 Cr worth MoUs signed at biotech meet' (*Business Line*, 3 February 2003: 3).

Members of AIBA include Novartis, Monsanto and ProAgro, but the association has no links with the seed industry per se.<sup>70</sup> Some claim the association to be relatively weak and that many of the multinationals that it represents do not really need the body.<sup>71</sup> While the same might equally be said of multinationals that are members of CII, CII does provide them with a greater cover of legitimacy and a more serious platform from which to raise their political concerns than membership of AIBA could provide. Nevertheless, representing larger firms and those with clearly defined interests in biotech means that the association suffers from fewer internal competing and potentially contradictory agendas amongst its membership than the SAI for example.

Its membership composition also explains the position of the association on issues such as IPRs, which they see as key to attracting foreign investors to India.<sup>72</sup> The association's views are lent weight by the interventions of officials such as the US ambassador to India Robert Blackwell who, in an address to the FICCI (Federation of Indian Chambers of Commerce and Industry), claimed that the absence of product patent protection in India was a key deterrent to US investment.<sup>73</sup> The other primary areas of concern for AIBA are biosafety regulation and import and excise duty. The head of the association, Vivek Singhal, claims to enjoy "excellent" relations with all the government departments active on the biotech issue, especially the Ministry of Commerce.<sup>74</sup> Former DBT advisor P.K. Ghosh also attends the meetings of the executive committee of the association and the relationship is reciprocated by Vivek Singhal's presence on the Development Task Force of DBT.<sup>75</sup> However, a report produced by the association under the authorship of C.Prakash in 2000 (AIBA 2000a), which was sharply critical of the Indian governments handling of biotech applications, served to sour relations with DBT for a while. The approval process is described by AIBA members as "defunct" and "bogged down in red tape" and "bureaucratic lethargy", with the work of GEAC, in particular, drawing fire for its "procrastination" in causing delays of up to 18 months. In general, however, close relations with key government departments have been used to make the associations views known on what they describe as a "cumbersome" regulatory process in need of simplification and the need for a rationalisation in the number of authorities required to give approval for new products.<sup>76</sup>

For AIBA, a key problem is state level government officials without experience or training in the handling of the technologies that are causing delays by refusing to take responsibility for overseeing biosafety measures. Building the capacity of state administrations to cope with trials is, therefore, an important aim for the association. DBT officials concede that regulatory structures at state level are in many ways "ornamental" because of their lack of resources and required training. Nevertheless, some

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<sup>70</sup> Interview with Malik AIBA, Delhi, 27 March 2001.

<sup>71</sup> Interview with K.P. Nyati, Head Environmental Management Division, CII, Habitat Centre, Delhi, 1 May 2001, Nyati.

<sup>72</sup> Interview with Dr Arvind Kapoor, Nunhems-ProAgro, Delhi, 27 March 2001.

<sup>73</sup> 'Blackwell lists deterrents to US investment' (*Business Standard*, 30 October 2002: 5).

<sup>74</sup> Interview with Vivek Singhal, AIBA, Delhi, 27 March 2001.

<sup>75</sup> Interview with Malik AIBA, Delhi, 27 March 2001.

<sup>76</sup> Interview with Malik AIBA, Delhi, 27 March 2001.



smaller “start-up” firms would like to see a greater degree of decentralisation of decision-making to state level, given their claim that ‘DBT want to control everything’.<sup>77</sup> This indeed has been a demand emerging from the work of the Vision group on biotechnology. Dinesh Joshi of Avesthagen has spoken of the need for a government office and patent cell in Bangalore to deal with biotech issues, rather than channel all processes through Delhi.<sup>78</sup> Concerns are expressed by activists, however, that in reality devolving the burden of regulation to state level would amount to self-regulation. The limited scope of regulation aimed at micro-managing the seed trade came to the fore around the scandal in Gujarat over the illegal growing and trading of Bt cotton (Dhar 2002). In 2001 it was found that Bt cotton had been grown in Gujarat and many other states, distributed by the company Navbharat Seeds. The Managing Director of the firm was subsequently arrested as a result of the episode. The idea that companies themselves can be relied upon to respect regulations in the absence of clear state-level capacity in this area is greeted with scepticism by activists such as Suman Sahai of Gene Campaign who asks rhetorically; ‘will Monsanto monitor Monsanto?’<sup>79</sup>

While all the associations described here interact on issues of mutual concern, ties appear to be closer between CII and AIBA, where the latter is indeed a member of the former and CII has people on leave from AIBA.<sup>80</sup> The overlap between the two outfits is perhaps less surprising when we recall who they represent and the preferences these firms have concerning the nature of the regulatory system. CII, for example, endorsed AIBA’s controversial report on biotechnology parks (mentioned above) which contained a dogged critique of the existing approval process in India. The SAI also work with CII, however, despite the different degrees of importance they attach to issues such as IPRs. A representative from CII claimed that all three groups are often able to work on a “consensus approach”.<sup>81</sup>

**CII** has a membership of over 4,000 companies, including 170 sectoral and regional associations and affiliates. 80 per cent of investment in India is accounted for by CII members that are largely drawn from industry rather than the financial sector. The body has 26 offices in India and 10 overseas, intended to help create a political climate of support for Indian industry.<sup>82</sup> By its own admission it is seen as a “big boys club” in which, although 40 per cent of its members are made up of smaller firms, these companies are less vocal than their larger counterparts.<sup>83</sup> That said, though multinational companies can be members of CII, they enjoy associate rather than full membership which means they do not have voting rights within the organisation.

CII is seen by many government officials and CII’s counter-parts in other industry associations as by far the most significant and powerful industry grouping in this debate. By all accounts, it is the most

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<sup>77</sup> Interview with leading bio-entrepreneur (IS).

<sup>78</sup> Interview with Dinesh Joshi, Avestha Gengraine Techs Pvt Ltd, Bangalore, 10 May 2001.

<sup>79</sup> Interview with Suman Sahai, head Gene Campaign, 4 May 2001, New Delhi.

<sup>80</sup> Interview with K.P. Nyati, Head Environmental Management Division, CII, Habitat Centre, Delhi, 1 May 2001.

<sup>81</sup> Interview with Sandhya Tiwari, Head of Biotechnology, CII, 30 March 2001.

<sup>82</sup> Interview with K.P. Nyati, Head Environmental Management Division, CII, Habitat Centre, Delhi, 1 May 2001.

<sup>83</sup> Ibid.

respected of the industry groupings and enjoys the highest levels of access with government departments such as DBT and the MoEF with whom CII has a “strong partnership”.<sup>84</sup> Senior figures within CII claim that ‘In 99 per cent of cases, no new policy is evolved without consulting us’ and more boastfully too that ‘we write the legislation, lets face it!’. The down side of this degree of influence is that CII is seen as a “bully” and too close to government.

CII is part of the Biotechnology India Alliance, an association set up to facilitate development of the biotech sector in India. Its functions are representational (of members views to government) promotional (facilitating investments, promoting Indian industry to the outside world) and educational (promoting dialogue through lectures, meetings, conferences and seminars; producing papers and informational materials) (CII 2003). CII also has a “core group” set up to address what the confederation perceives to be the shortcomings of the existing regulatory system, which their head of biotech describes as “ad hoc”, without clear guidelines, and involving “multiple agencies” without their being clarity over who is responsible for which part of the process. Instead, CII’s preference is for an “industry-friendly” single agency that would house experts in all the relevant areas (environment, food safety etc) and where decision-making is by consensus. The US model of regulation is held up favourably as an appropriate model in this regard. The Indian system is compared unfavourably where decisions can drag on with committees meeting on an irregular basis and dependent upon sufficient members being available for them to be able to convene, resulting in delays in planting and firms being “sent around the garden”. One industry representative went as far as to describe the process of consultation and review as “over-democratic”. There are also expressed concerns about the conflict of interests between committee members from the public and private sectors where there may be competition around resources or access to particular technologies (Newell 2002).

The Confederation sits on all 25 committees within MoEF that address issues of concern to its members including those dealing with the Biosafety Protocol and Biodiversity issues, as well as sitting on RCGM.<sup>85</sup> The confederation is also able to make key inputs into the policy process through the publication, for example, of a White Paper on biotechnology regulation in India which lays out a strong case for a single-window, time-bound regulatory approval process (maximum three months) in contrast to the multiple clearances currently required.<sup>86</sup> This stance clearly reflects the needs and corporate strategies of the bulk of its multinational members. Impact for initiatives such as the White Paper is secured through active government involvement and “buy-in” early on in the development of the paper. Following in the wake of reactions to the AIBA report, mentioned above, CII are anxious not to alienate government officials, but rather to bring them in to their discussions about changes in the regulatory system. Workshops, such as those referred to above, help to build bridges and allow for the exchange of concerns.

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<sup>84</sup> Interview with K.P. Nyati, Head Environmental Management Division, CII, Habitat Centre, Delhi, 1 May 2001.

<sup>85</sup> Research Committee on Genetic Manipulation.

<sup>86</sup> Interview with Sandhya Tiwari, Head of Biotechnology, CII, 30 March 2001.

Though some firms that have been involved in the process express scepticism about the impact of the White Paper, DBT Secretary Manju Sharma has publicly acknowledged industry's concerns over the speed and complexity of the approval process and in a private meeting with seed industry representatives claimed that 'We [the government] have tried to streamline the process'. To demonstrate the government's commitment to biotech she took the extraordinary step of assuring those in attendance at a meeting with the Indian seed industry, some time before the crop was finally authorised for commercialisation, 'Let us assume that cotton will be in the hands of the farmers very soon'.<sup>87</sup> Despite this high level of support, CII acknowledge the need to boost the profile of industry on committees such as RCGM dealing with these issues. K.P. Nyati, Head of Environmental Management Division at CII, also feels that 'industry is not worried enough' and that CII needs 'to broaden the base of interest to raise the level of dialogue with government'.<sup>88</sup>

Among CII and their close associates, there are clear policy entrepreneurs whose own political contacts and commercial success, make them attractive sponsors of the confederation's overall message. Kiran Muzumdar-Shaw, head of BioCon in Bangalore and dubbed the "Queen of biotechnology" by *The Economist* (Scoones 2002) and chair of the Karnataka Chief Minister's "Vision" group on biotechnology, and her colleagues, have played a key agenda-setting role in setting the tone for the debate on reforms to the system of biotechnology regulation in India. She also chairs the CII National Committee on Biotechnology and is President of the ABLE (Association of Biotechnology-Led Enterprises) group set up to tackle common issues faced by the biotech industry.<sup>89</sup> The Association, formed in February 2003, provides a global interface between the industry, governments and academic and research organisations.<sup>90</sup> Membership of such committees is not just seen as a sacrifice made on behalf of the biotech sector as a whole. Rather, Muzumdar-Shaw concedes that being Chair of the Vision Group, for example, 'is [also] good for my business'.<sup>91</sup>

Many multinational firms that are members of CII do their own lobbying as well as feeding their inputs through the confederation. In the case of Monsanto, for example, public policy positions tend to be formulated within the firm rather than as a result of forming common positions within an industry association. This reflects the ownership structure of the firm and the way in which policy priorities are determined by the company's headquarter offices in St. Louis.<sup>92</sup> Monsanto India also receives from head office strategically useful material such as scientific or food safety studies that may endorse the case for a product approval being considered in Delhi. Likewise, while the national office claims some autonomy, Monsanto India representatives acknowledge that clearance for key decisions has to be obtained from the

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<sup>87</sup> Keynote speech at seminar on 'Agricultural biotechnology: The need of the new millennium', 9 April 2001.

<sup>88</sup> Interview with K.P. Nyati, Head Environmental Management Division, CII, Habitat Centre, Delhi, 1 May 2001.

<sup>89</sup> 'Biotechnology companies float "ABLE"' (*Economic Times*, 4 February 2003: 8).

<sup>90</sup> 'CII sets up forum to promote biotechnology' (*Business Standard*, 7 February 2003: 2).

<sup>91</sup> Interview with BioCon February 2002 (IS).

<sup>92</sup> Interview with Monsanto representative, New Delhi.

head office. This pattern of decision-making within the firm was also confirmed by representatives from the company's office in Beijing China.

To a greater degree than either SAI or AIBA, CII are very active in international policy debates on biotech issues working with groups such as BIO (Biotechnology Industry Organisation)<sup>93</sup> and the Global Industry Coalition, as well as with counter-parts in South Africa and Europe. CII and the US-India Business Council launched the Indo-US Biotech Alliance in November 2002, of which BIO was a member. The alliance is part of the US-India Economic Dialogue launched by Prime Minister Atal Bihari Vajpayee during his visit to the US in 2001 aimed at improving investment opportunities and business cooperation in biotechnology.<sup>94</sup> They are aided in this endeavour by the work of groups such as I-Bio (Indian Biotech Industries Organisation) that helps biotechnology companies in the west to invest in India. For the companies, these ties serve both commercial and political purposes and can be initiated by the groups themselves or the government on overseas trade promotion tours where representatives from CII have been invited along to promote the benefits of investing in India to overseas firms.<sup>95</sup> CII has undertaken "biotech missions abroad" to the USA and Canada in June 2002 as well as to the UK in July 2002 (CII 2003). The confederation is also organising the first 'Made-in-India' show in Beijing in October 2003 where biotech will feature highly.<sup>96</sup> CII see these visits as key to offset the image of India as a hostile investment environment for biotech firms. In playing this promotional role, CII has been at the forefront of persuading GoI to provide tax breaks for investors in research and development and for patented products,<sup>97</sup> lowering duties and creating attractive infrastructures, following the model set by the information technology industry.

Such activities have borne fruit. CII, the US-India Business Council and BIO of the US signed a memorandum of understanding covering information sharing on trade and investment opportunities in the biotech sector with a particular focus on agriculture, facilitation of "one-to-one" interaction between business and government in the US and India and the establishment of a working group to facilitate trade opportunities.<sup>98</sup> BIO is able to help Indian firms to access partners for the formation of joint-ventures, for example<sup>99</sup> and can provide smaller outfits such as AIBA with resources and materials to support their efforts to represent the industry to government in a positive light.

It is these sorts of market access export-oriented concerns that preoccupy Assocham. Assocham, the Associated Chambers of Commerce and Industry, has been less active on the biotech issue, but did produce a ten point charter which advocated, amongst other things, a 'National Biotechnology Development Fund' (Assocham 2003). Assocham have also lobbied the government for a ten year tax

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<sup>93</sup> Interview with K.P. Nyati, Head Environmental Management Division, CII, Habitat Centre, Delhi, 1 May 2001.

<sup>94</sup> 'Indo-US biotech alliance launched to boost fund flow' (*Business Line*, 9 November 2002: 4).

<sup>95</sup> Interview with Sandhya Tiwari, Head of Biotechnology, CII, 30 March 2001.

<sup>96</sup> 'First made in India fair in Beijing in October next' (*Financial Express*, 9 August 2002: 9).

<sup>97</sup> 'Biotech sector seeks tax sops' (*Business Standard*, 19 February 2003: 3).

<sup>98</sup> 'India, US sign MoU to boost biotech sector' (*Financial Express*, 8 November 2002: 9).

<sup>99</sup> Interview with Dr Chandra Prakesh, AIBA, 27 March 2001.

holiday and zero import duty on capital goods and consumables used by the biotechnology industry.<sup>100</sup> On the export side, the government under its 'Market Access Initiative' responded to this pressure, promising to reimburse the registration charges abroad for Indian pharmaceutical and biotechnology companies.<sup>101</sup> Echoing the calls of its larger counterparts in CII, Assocham has supported demands for a biotechnology regulatory commission to serve as a 'single window mechanism for biotechnology policy and regulation' and has called for the urgent modernization of India's patent offices to provide 'the necessary support to biotechnology IPRs'.<sup>102</sup> Like other associations they have also played a key part in constructing inflated claims about the potential growth trajectory of the biotech sector in India, that the sector may grow by 100 per cent per annum up to the year 2005,<sup>103</sup> for example.

### **3.3 State level industry associations**

While it makes sense for larger firms whose activities are more directly impinged upon by national level processes to engage in Delhi-based politicking, the situation is different for smaller biotech and seed enterprises. Though clearly influenced by national policy measures in the areas of seed policy and quarantine restrictions (which mean clearances may take up to six weeks for example), many smaller firms find that their day-to-day operations are more directly affected by the outlook of the state rather than the federal administration. Unlike larger seed firms such as Indo-American that have their own good relations with the Chief Minister in Karnataka, for example, as well as channels of access to the federal government, smaller firms tend to use local groupings such as the Karnataka Chambers of Commerce and Industry (KCCI) as the vehicle through which to represent their concerns, even if they also belong to the national SAI.<sup>104</sup> On larger international issues of IPRs, biosafety and the Agreement on Agriculture, they do not consider themselves to be a powerful voice, even if they echo, on occasion, the positions adopted by their larger industry counter-parts.

KCCI, widely seen as the most influential trade body within Karnataka politics, has a direct membership of over 2,000 clients as well as associations that belong to the chambers. Such bodies play a key part in awareness raising for their members on issues of strategic importance, as well as engaging in promotional activities for Karnataka based firms. This is in addition to more traditional lobbying and representational functions carried out through sitting on state level government committees.<sup>105</sup> While they work with bodies such as CII on larger issues such as infrastructural development, they tend to view them as too "Delhi-driven", "top-down" and "less independent". KCCI's own approach is slower and more democratic according to its secretary, driven by the interests of its members who have for the most part not yet adapted to "new global market realities". On biotech issues they are less active largely because they

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<sup>100</sup> 'Assocham seeks zero import duty for biotech units' (*Financial Express*, 14 May 2002: 9).

<sup>101</sup> 'More funds to encourage exports from states' (*Business Standard*, 1 April 2002: 5).

<sup>102</sup> 'Assocham calls for biotechnology fund' (*Financial Express*, 26 March 2003: 6).

<sup>103</sup> 'Biotech sector may grow much faster than IT says ASSOCHAM' (*Financial Express*, 18 March 2003: 9).

<sup>104</sup> Interview with A.R. Modi, Oriental Biotech Limited, 8 May 2001, Bangalore.

<sup>105</sup> Interview with Mr T. Ramappa, Secretary, State of Karnataka Chambers of Commerce and Industry, Bangalore, 14 May 2001.

are member driven and the bigger players present their own position on these issues rather than channelling their concerns through KCCI. While firms such as BioCon are members of the group, they are strong enough to represent themselves and in any case ‘the government is pampering them’, as one representative put it. Nevertheless, KCCI has been involved in the state level Biotech Task Force and its Secretary Ramappan is personally involved in the work of the WTO cell at state level.

The GMCI (Greater Mysore Chambers of Commerce and Industry) provides an interesting point of comparison. GMCI claims to represent “the big boys”, accounting for over 95 per cent of investment in the medium and large-scale business sectors in Karnataka.<sup>106</sup> This explains its focus on industrial policy; tax relief, concessions and subsidies for their members. Issues of IPRs and biosafety regulation have not yet become burning issues for their members, though they are involved in awareness-raising on these issues. GMCI was not especially active in the Vision group which formulated the Millennium Biotech Policy for the state in 2001, though one of its members Kiran Muzumdar-Shaw from BioCon was a key player, as mentioned above.<sup>107</sup> The involvement from key industry players such as Shaw and representatives of Monsanto perhaps explains the high profile of biotech within the final document, despite Monsanto’s concerns that the document addresses the needs of the pharmaceutical companies better than agricultural interests.<sup>108</sup> The hype about “biotech corridors” and “biotechnology parks” in the Millennium report demonstrated for some the government’s ‘desperation to be seen as pro-industry and pro-investment’.<sup>109</sup> Partly such positioning is an attempt to secure International Finance Corporation (World Bank) funds for projects such as the “Genome Valley Biotech Park”. The Andhra Pradesh Industrial Development Corporation has received Rs100 crore from IFC for this and other biotech projects.

Not leaving it to their counter-parts at state level, some of the prominent national bodies mentioned above, such as CII, have also sought collaborations with state level governments to encourage investment in the biotech sector. For example, the government of Andhra Pradesh has set up seven task forces in association with CII to increase investments in sectors such as biotech.<sup>110</sup> Groups such as AIBA also maintain regional chapters, in the South for example, to raise their profile with potential new members and tackle issues of regional concern.

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<sup>106</sup> Interview with R. Viswanathan and colleagues, Secretary General GMCI, Bangalore, 14 May 2001.

<sup>107</sup> The Vision group’s membership included a representative from AstraZeneca, Kiran Muzumdar-Shaw and Villo Morawala Patell from BioCon and Avesthagen respectively, four biotech scientists from public institutions, a venture capitalist from ICICI Venture Funds and Omkar Goswami of the Confederation of Indian Industry (Department of IT and Biotechnology 2001).

<sup>108</sup> Interview with Dr Jagadish, Monsanto, Bangalore, 14 May 2001.

<sup>109</sup> Interview with Saritha Rai, Technology correspondent, South Asia, *Time* magazine, Bangalore, 16 May 2001.

<sup>110</sup> ‘Industry specific task forces in AP soon’ (*Business Standard*, 20 March 2003: 4).

## 4 Gauging influence

This section looks at the different dimensions of business influence through the lens of material, institutional and discursive power. Such an approach is helpful in understanding links between the structural power of firms that derives from the resources they provide the state with, the nature of access to key decision-making institutions that they are able to secure as a result of this, and how such access and influence is supported by, and in turn generates, understandings about the strategic importance of biotechnology to the Indian economy. Intricate social and funding ties between policy-makers, industry personnel and media representatives serve to ensure that, despite concerted opposition within some quarters of civil society and within certain parts of the GoI, the prevailing orthodoxy continues to be that the further development of biotechnology is in India's national interest. Emphasising the cultural and discursive elements here is important because, as Scoones (2002) and others have argued, the hype about the potential of the sector, which is helpful in securing access and influence, often far outstrips the material contribution of biotechnology to the growth of the Indian economy to date. Taken together, these forms of influence help to account for the forms and degree of power that industry groups have been able to exercise in the politics of biotechnology in India.

### 4.1 Material

The first thing to note here is the way in which some of the larger firms within the biotech sector have been able to present the interests of their particular fraction of capital as consistent with those of capital in general. Hence, while all sectors and firms compete to demonstrate their strategic importance to the economy of the country in which they are operating, some are better placed to make the case that their activities coincide with the government's own national interests than others. For biotech companies operating in India, the simultaneous potential for high profitability, global market penetration and the prospect of addressing some of India's food security needs, places them well to argue that their commercial interests coincide with those of the national interest. The intention of such claims is to fuzzy any distinctions that may exist between notions of what is in the national interest and what is in the interest of leading firms.

Hence, while the potential for growth and employment that agricultural, as opposed to pharmaceutical-based biotechnology, can deliver is hotly contested in public arenas in India,<sup>111</sup> the prevailing perception amongst policy elites within government is that biotechnology has great growth potential, reflected in the pronouncements of the Indian Prime Minister and his heads of department in government. Prime Minister Atal Bihari Vajpayee stated at the Science Congress in Delhi in 2001 that India's vision included 'shaping biotechnology into a premier precision tool of the future for creation of wealth and ensuring social justice especially for the welfare of the poor' (quoted in Herring forthcoming). This vision is also shared by the department that is in many ways at the centre of biotechnology regulation

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<sup>111</sup> 'Pharmaceutical companies, government laboratories to drive biotechnology growth' (*Business Line*, 22 March 2003: 5).

in India, the DBT. P.K.Ghosh, former DBT advisor said that ‘we have to push this technology . it is good for the country’,<sup>112</sup> while Manju Sharma has used her position as DBT Secretary to publicise the benefits of biotechnology for Indian agriculture.

Structural analysis of the relationship between state and business would also suggest that larger businesses tend to enjoy a privileged position with government because governments’ depend on them for taxation, employment and legitimacy through their endorsement of government handling of the economy. In so far as structural power is defined as ‘the power to shape the context in which others make decisions’ (Strange 1988), the capital mobility that larger firms enjoy heightens their structural power over governments. While access to skilled labour and adequate infrastructure place constraints on where firms can locate, large biotech firms consider themselves to be highly mobile in where they base themselves. This provides them with a degree of leverage over governments anxious to attract investors where they can exercise a powerful threat to move operations elsewhere. Comparisons with China, discussed below, are invoked by bodies such as the CII, as well as individual firms, to underline the fact that if the Indian government does not send out positive signals about biotech development in the country, there are many other attractive investment locations that firms could move to. Quotes below from government officials testify to the extent to which these fears have registered in their discourse and outlook. What is interesting is that given the cooling of China’s attitude towards biotechnology development and growing levels of resistance to GMOs in Thailand, Philippines, Japan and South Korea, the credibility of industry threats to relocate to other countries in the region is diminishing, even though they continue to be used as lever of influence and appear to have been internalised by senior policy-makers.

The perception of the growth potential of biotech in India is endorsed and encouraged by many of the media and business-based narratives discussed below. But its acceptance is also a function of the social networks that bring commercial and policy elites together which help to nurture this consensus. This occurs formally through the organisation of seminars between industry and policy-makers, examples of which are provided above. These occasions are used by government officials such as Manju Sharma to repeat back to industry their own mantras about grasping the nettle of biotechnology, a technology India cannot afford to be without given declining yields, rising populations and millions without access to adequate levels of nutrition. Sharma’s talk of the “crisis” in Indian agriculture resonates with the calls of Assocham and others to adopt biotechnology “on emergency footing” given that “Indian agriculture is in an emergency situation” (Assocham 2003). When DBT secretary she endorsed the highly disputed industry claim that the Indian biotech market was expected to reach \$2.5bn by 2001 (Scoones 2002). Informally, the message reinforcement occurs through social networks that meet at elite social clubs that business and government personnel frequent in cities such as Bangalore and Hyderabad where opinions can be expressed more freely and gossip shared more easily than in formal meetings with government officials. These channels are often especially important for firms whose economic might alone is not sufficient to guarantee the ear of government. Representatives of GMCI and their affiliates, for example,

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<sup>112</sup> Interview with Dr P.K. Ghosh, then Scientific Advisor, DBT, Delhi, 28 March 2001.



are clear about the strategic value of their attendance at the “Bowring institute” and other clubs in Bangalore in order to network and seek to influence officials from the Karnataka state government that frequent the club.

## **4.2 Institutional**

The institutional influence that firms are able to enjoy manifests itself more directly in the form of access to committees and key government departments involved in policy-making on biotechnology issues. While some argue that industry have “tentacles everywhere” within government,<sup>113</sup> in reality the patterns of influence are rather more complicated. It is important then to disaggregate the question of influence and address it in terms of links between particular associations and even at the level of relations between particular firms and specific government departments.

There are multiple formal institutional channels which firms can use to express their concerns and seek to advance their interests. On the formal reporting side, each company conducting biotechnology work is required to have an Institutional Biosafety Committee that sends regular reports and questionnaires on biosafety issues to DBT. Larger agrochemical firms such as Rallis also claim to interact on a regular basis on biosafety issues with key individuals within the national policy process such as P.K. Ghosh and Manju Sharma. Given the nature of their portfolio, however, their advice is sought more frequently from committees regulating pesticide use where they claim to be heavily involved in “framing the rules”.<sup>114</sup> Sometimes it is the case that an association will be invited to comment on proposals, in other cases individual firms will be approached. What is interestingly about firms such as Rallis, with interests in biotech and in pesticide and fertiliser production is that the association through which they channel their concerns differs according to the issue. For example, for inputs on global chemical regulations, Rallis tend to go through CII, whereas for their seed sector interests they use SAI.

Despite industry protestations of lack of consultation over the design of regulations, a more plausible explanation is that while they enjoy close relations with some parts of government, this is not the case with all government departments. For example, while relations with ministries such as commerce and industry are good, biotech firms have been less successful at getting a sympathetic hearing for their concerns with the Ministry of Environment and Forests. Firms that belong to CII and AIBA have been strongly supportive of common approaches to risk assessment and the use of principles such as substantial equivalence and familiarity, reflecting their ties to global industry groupings such as BIO (Newell 2002). They have been unable to persuade environment bureaucrats of the merits of approaches to regulation such as these that are minimally disruptive of global trade, however. While there is some acceptance among government bureaucrats of the value of standards on risk being set internationally and there exists some support for “mutual recognition” of other countries risk assessment procedures, there is

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<sup>113</sup> Interview with NGO representative, New Delhi, 4 April 2001.

<sup>114</sup> Interview with senior official within, Rallis, Bangalore, 11 May 2001.

reluctance among MoEF representatives to ‘rely on trials from the U.S and Europe’ as a basis for approving crops in India.<sup>115</sup>

On this and other issues, firms express frustration because MoEF officials tend not to be technical specialists but general IAS (Indian Administrative Service) officers. Because personnel there change every couple of years, firms feel officials there need to be “educated” each time on the technical aspects of the biotech issue. Whilst acknowledging that ‘things only happen when industry pushes’,<sup>116</sup> MoEF are critical nevertheless of the intensity of industry lobbying on the issue which they regard as excessive. Given this pattern of interaction, it is perhaps unsurprising that NGOs go to MoEF first, rather than other ministries and departments that are considered to be more receptive to industry positions on the issue<sup>117</sup>, despite the fact that MoEF is seen to be weaker within the overall process.

While CII and AIBA appear to enjoy more influence with DBT and the Ministry of Commerce and Industry than with the Ministry of Agriculture, SAI has closer links with the latter.<sup>118</sup> As perhaps the most significant seed association in India, an important aspect of SAI’s mandate has been to cultivate close links with the Ministry of Agriculture. Seshia notes, ‘To this end it has established itself as an industry representative within policy networks by, for example, securing seats on a number of government committees’ which provide ‘a base from which to influence policy’ (2002: 2744). DBT, on the other hand, is accused by opponents of biotech to operate, essentially, as the mouthpiece of multinational biotech firms. DBT’s then Scientific Adviser, P.K.Ghosh in particular was lambasted by the Delhi press in 1998 over allegations of collusion with Monsanto-MAHYCO and by activists for his over-zealous approach to endorsing the company’s application without due regard for the procedures set up to approve GMOs. Those involved in decision-making on the RCGM and GEAC approval committees comment on the way in which “Ghosh speeds the process up” by bundling together a series of requests for approval.<sup>119</sup> This haste, however, has resulted in Vandana Shiva’s organisation ‘Research Foundation for Science, Technology and Ecology’ bringing a case before the Supreme Court of India over the authority of the body that approved trials of the controversial Bt cotton crop (RFSTE 2002). Critics also allege a pro-industry bias in the selection of scientists that sit on the RCGM and GEAC committees to the exclusion of critics.<sup>120</sup> Scoones (2003) notes that the RCGM is overwhelmingly dominated by molecular biologists where there are strong levels of consensus on the benefits of the technology. A similar allegation is levelled at the government over the consultation process that takes place regarding proposed amendments to biosafety regulations, where a relatively closed and supportive group of researchers and NGOs are invited to comment on proposals, rather than a wider circle of critics.<sup>121</sup> On the Protection of Plant Varieties and Farmers’ Rights bill, Monsanto was invited by the Joint Parliamentary Committee to make

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<sup>115</sup> Interview with Dr Indrani Chandreshek-Laran, 29 March 2001.

<sup>116</sup> Interview with Dr Indrani Chandreshek-Laran, 29 March 2001.

<sup>117</sup> Interview with Dr Indrani Chandreshek-Laran, 29 March 2001.

<sup>118</sup> Dr Babu MOEF, 30 March 2001.

<sup>119</sup> Interview with RCGM or GEAC member, 3 April 2001.

<sup>120</sup> Interview with NGO representative, New Delhi, 4 April 2001.

<sup>121</sup> Interview with Indian activist in the UK, August 2002.

an oral submission during consultations on the bill in 2000, the only individual company to do so (Seshia 2002).

There is some evidence also of a strong degree of overlap between the DBT and the industry whose activities it is meant to regulate, raising concerns that have been raised elsewhere about the ability of the same agency to simultaneously be a “promoter” of a technology and a “protector” against the risks associated with it (Jasanoff 1995). To take one example, Dr S.R. Rao of the DBT was formerly involved in developing a strand of biotechnology-related work with Rallis corporation in Bangalore.<sup>122</sup> Suspicions about the unhealthy degree of interaction between DBT and the biotech companies it regulates, are compounded by incidental evidence of the ties between the two such as the Mahyco calendar which hung on P.K. Ghosh’s wall or the Monsanto diary-filofax that sits on S.R. Rao’s desk in the DBT.

The close relationship industry is said to have with DBT is also manifested in closed workshops organised by industry associations such as the SAI and CII and senior DBT staff including P.K. Ghosh and Manju Sharma where common problems are shared and proposed strategies for promoting biotechnology discussed. In July 2001 (27–19), CII organised a major conference for example on ‘Biotechnology on the fast track: realising regulatory reform’. These meetings with DBT are significant from an industry point of view, not only because of the department’s strategic role in the regulatory process, but also because it determines the allocation of budget resources for biotechnology research. Such occasions provide the opportunity to lobby for support for particular research priorities. The relationship runs the other way too, of course where industry projections of economic success bolster DBT’s claims for resources from the Planning Commission given that they are competing for central government funds with other government agencies.

Despite the closeness of the relationship between some biotech firms and the DBT, many firms are damning of the delays in the approval process which they put down to DBT stalling because of its over-cautious approach to biotech (AIBA 2000a). Firms such as Monsanto India complain of the broad range and questionable necessity of some of the tests they have to undertake to assess the biosafety of their products.<sup>123</sup> Many such studies on pollen flow, or effects on cattle are deemed to be “irrelevant” resulting from bureaucratic imperatives to ensure that the regulations are seen as legitimate and to be seen to be doing something.<sup>124</sup> Individuals within the DBT express some sympathy with the view that current testing procedures are “unworkable” and the concern that the peer-review system is “over-done”. Echoing a point raised above, there is a suspicion on the part of some biotech firms that businesses whose core investments are in pesticides and chemicals and with whom the government traditionally has enjoyed a close relationship, are using fears about biotechnology applications to slow the growth of the industry as it competes directly with their potential share of the market. In reality, the fact that cotton is the first crop to go through the system may explain the protracted nature of the process on this occasion. And in spite of

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<sup>122</sup> Interview with Dr S.R. Rao, DBT, 4 April 2001.

<sup>123</sup> Interview Monsanto India, 4 April 2001.

<sup>124</sup> Ibid.

these complaints, many observers of the process have also noted a warming and a closing of relations between DBT and the biotechnology industry, such that the department now “has the confidence of industry” and that they can work as “partners”.<sup>125</sup> This warming follows a cooling of relations following the highly critical “Biotechnology Parks” report produced by AIBA back in 2000, and appears to have intensified following the decision to approve Bt cotton for commercial release in March 2002.

### **4.3 Discursive**

Besides the material power wielded by some biotech firms and the level of access and influence that they are able to secure through institutional means, an important part of the story is the social construction of the commercial potential of biotechnology. Media framings help to boost perceptions of the material potential of the sector as well as ensure high levels of government interest in the industry’s activities, key to sustaining institutional access. There appears to be an intimate relationship between each of these dimensions, therefore, where material power helps to secure institutional access and both interactions with policy communities and the economic potential of the sector create a conducive environment for the construction of discourses supportive of biotech development. In turn, the prevalence and potency of discourses about the centrality of biotechnology to India’s ability to meet broader development goals of growth and food security creates space for institutional access and helps to encourage investment in the biotech sector.

Despite the limited ability of firms to deliver a pro-poor biotechnology under existing circumstances and their professed reluctance to accept this role, which they see as primarily a public sector responsibility,<sup>126</sup> the case for biotechnology development in a country like India is premised on a set of assumptions that leading firms have played a key part in constructing and embedding in policy debate. Key government officials repeat back the central mantras of declining productivity, lack of fertile lands, and rising costs of inputs that are said to make biotechnology the “only way” forward.<sup>127</sup> Though it remains removed from the reality of lack of progress and poor incentive structures for industry to perform the role set for it, the narrative about the potential of biotechnology to meet the needs of the poor serves to reassure investors and suspicious publics about the technology. Important for our purposes here, however, is the way in which these projections, assumptions and myths are internalised and carried forward in policy discourse by influential players within key government departments.

Many media commentators and industry representatives discuss the potential of biotechnology in light of the success achieved by the information technology industry in India. The slogan “from IT to BT”<sup>128</sup> slips easily from the mouths of advocates of the technology, as if IT provides a replicable model for the successful development of biotechnology in India. Such assumptions are in many cases ill-founded as Scoones (2002) points out, but their status as “givens” in policy debates that gain reinforcement

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<sup>125</sup> Interview with Vibha Dhawan, TERI, 29<sup>th</sup> March 2001.

<sup>126</sup> Interview with Sandhya Tiwari, Head of Biotechnology, CII, 30 March 2001.

<sup>127</sup> Interview with Dr P.K. Ghosh, Scientific Advisor, DBT, Delhi, 28 March 2001.

<sup>128</sup> Interview with Dr Arvind Kapur, Nunhems-ProAgro seeds, 27 March 2001.

through constant repetition and uncritical acceptance is unquestionable.<sup>129</sup> Biotech companies gain materially from such an association with the IT “success” story. The Minister of Finance has granted biotech companies the same entitlements as the other “sunrise” industries such as IT, including tax holidays and exemptions from customs duty, for example.<sup>130</sup> There are many contestable assumptions behind media-led social constructions of the seamless continuity from the IT to BT revolutions around the level of skills required to sustain the shift and about the types of government intervention that are necessary to support these new market players, but such details are overlooked in the rush to sell India as a prime biotech location for investors.<sup>131</sup>

Despite more critical coverage in papers such as *The Hindu* or the *Indian Express*, key daily national papers such as the *Economic Times* play an important role in this process, a newspaper which Sharma describes as “the mouthpiece of industry”.<sup>132</sup> Both *Time* magazine India and *Economic Times* adopt a broadly pro-biotech line, but it is the ET which is taken most seriously by government.<sup>133</sup> In terms of magazines and weekly journals, *India Today* is seen as more pro-government and less critical, but with a huge circulation it is taken seriously by politicians.<sup>134</sup> *Business World* and *Business Line* also play an important role within the biotech sector in promoting the attractiveness of investing in the sector and lending support to claims regarding its growth potential. *Economic Times* reported that the bioinformatics sector in India is registering per annum growth of 90 per cent.<sup>135</sup> Similarly, Kiran Muzumdar-Shaw is quoted as suggesting that the biotech business in India will reach \$1.5 billion by 2007<sup>136</sup> and *The Financial Express* cites back the same figure uncritically, gleaned from a CII report on the subject.<sup>137</sup>

These magazines and newspapers have played a key role in terms of selling the potential of Indian firms to global audiences, faithfully and regularly reporting statements from leading pro-biotech NRIs (Non-Resident Indians) such as C.S. Prakash, endorsing the government’s approval of Bt cotton for example.<sup>138</sup> The views of bodies such as the *Foundation for Biotechnology Awareness and Education*, which aims to generate beneficial publicity about the benefits of biotechnology for Indian agriculture, are frequently reported. The opinions of leading industry bodies are taken as an adequate statement of truth in the debate in much of the mainstream media. In a story on the problems associated with India’s patent legislation, *Business Standard* concludes; ‘India requires a strong patent regime to encourage research and development. Intellectual property rights must be used to build an asset base’.<sup>139</sup> The same publication

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<sup>129</sup> Interview with Dr Rana, formerly of WWF-India and representative of GoI in CBD negotiations. Habitat Centre, Delhi, 28 March 2001.

<sup>130</sup> ‘Sunrise sector gets its due from FMP’ (*Financial Express*, 1 March 2003: 10).

<sup>131</sup> Interview with Mr Pani, *Economic Times*, 8 May 2001, Bangalore.

<sup>132</sup> Interview with Devinder Sharma, 4 April 2001.

<sup>133</sup> Interview with Saritha Rai, Technology correspondent, South Asia, *Time* magazine, Bangalore, 16 May 2001.

<sup>134</sup> Rai was Karnataka correspondent for *India Today*.

<sup>135</sup> ‘Biotech sector to lead in Bio-IT adoption’ (*Economic Times*, 26 December 2002: 4).

<sup>136</sup> ‘Indian biotechnology will grow exponentially: Kiran Shaw’ (*Express Pharma Pulse*, 4 July 2002: 20).

<sup>137</sup> ‘Biotech sector poised for better growth’ (*Financial Express*, 28 June 2002: 3).

<sup>138</sup> ‘Expert endorses Bt cotton decision’ (*Business Standard*, 12 April 2002: 16).

<sup>139</sup> ‘MNCs fear patent abuse’ (*Business Standard*, 15 May 2002: 4). ‘Patent laws a hurdle for biotech R and D’ (*Business Line*, 21 January 2002: 3).

also attributes the success of Bangalore in attracting biotech investors to the “single clearance for investors”, endorsing the calls of industry associations for such clearance at national level.<sup>140</sup> Sector specific magazines such as *Chemical Weekly* also play an important role in hyping the sector’s success. The magazine ran a story claiming, for example, that the Indian biotech sector is on the “fast track to catch up with western countries” and is “on the threshold of a big revolution”.<sup>141</sup>

One recurrent feature of this general narrative about the enormous potential of agricultural biotechnology and the urgency with which it is to be tapped is the “myth of the biotech superpower”, China. The analysis underpinning this narrative is weak on detail, importantly regarding the extent to which there is scope to apply in India the Chinese model of agribiotech development. Key differences that are often glossed over in the rush to present China as a viable model for India to follow include; the different capacities for public sector research, the contrasting role of civil society in contesting the benefits of the technology and the divergent degrees of dependence on external market acceptance as opposed to producing for domestic consumption. Nevertheless, the success of biotech developments to date in China is a common point of reference for government officials who readily cite the savings in pesticide use, the absence of detrimental environmental affects and the positive benefits accruing to smaller farmers reported in studies from China.<sup>142</sup> Slow-downs in the process are regarded as missed opportunities to catch-up with China. P.K. Ghosh, former advisor to DBT and member secretary of the RCGM committee, regrets that when Monsanto and Mahyco proposed cotton back in 1993, a decision was stalled which meant that India “lost the bus” that would have allowed them to surpass China’s technological supremacy in this area.<sup>143</sup> Industry groups such as CII also create this sense of a zero-sum competition between India and China, where potential investors are “waiting and watching” to see which signals the government sends out about its likely stance on approvals for LMOs, in order to create pressure on government officials to hasten the approval process.

## 5 Conclusion

This paper has sought to identify and explain the ways in which different firms affected by and involved in the debate about the role of biotechnology in Indian agriculture have sought to advance their interests. It has been argued that the public positions of larger biotech and agro-chemical companies, seed enterprises and newer start-up firms and the associations they belong to relate to the differences in their underlying corporate strategies. The extent to which these firms are involved in primary research, export their products or require protection for their products helps to determine their political affiliations to the leading industry bodies that are active on biotechnology issues. In turn, each of these associations has been shown to have distinct patterns of interaction with particular government agencies involved in the

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<sup>140</sup> ‘Survey finds Karnataka second most favoured destination’ (*Business Standard*, 28 February 2002: 8).

<sup>141</sup> ‘Biotechnology: India and China on the fast track’ (*Chemical Weekly*, 14 January 2003, Vol 48 Issue 21: 97–8).

<sup>142</sup> Interview with Dr S.R. Rao, DBT, 4 April 2001.

<sup>143</sup> Interview with Dr P.K. Ghosh, then Scientific Advisor, DBT, Delhi, 28 March 2001.

regulation of biotechnology products, as well as differing degrees of contact with global industry coalitions. Alongside this, individual firms, especially larger companies such as Monsanto have adopted their own unique and changing approach to policy engagement.

Assessing in precise terms the degree of influence that these industry actors have had upon the course of biotechnology policy in India is a fruitless endeavour. It is clear though that through a combination of material influence, in most cases high levels of institutional access, and in a context in which claims about the benefits of biotechnology are echoed and repeated in influential media, industry, some firms more than others, has played an important role in the evolving regulatory regime. Reasons for this include the expertise and economic weight of these actors and the fact they are providing a technology which ostensibly has the potential to directly address many of the most pressing problems India faces. Smaller actors in the vast seed sector in India are, as yet, barely involved directly in the current debate about India's "gene revolution". While they are happy for a body like the SAI to present their concerns to government regarding laws governing seed markets and more generic concerns about competition from foreign seed producers, they are not at the frontline of debates about the role of biotechnology in Indian agriculture. Instead, the policy agenda in Delhi appears to be far more influenced by a fairly close-knit policy network of biotech entrepreneurs from larger multinationals and successful start-up firms such as BioCon with good national and global connections. While SAI has the ear of the Ministry of Agriculture on issues of seed certification and plant variety protection, the DBT finds support for its pro-biotech position from the drivers of the technology, the major biotech firms themselves.

Whose influence runs furthest will depend on the respective priority that the government attaches to biotechnology promotion as opposed to biosafety protection, or to patent protection as opposed to looser systems of crop protection. In essence, it will rest on the perceived role of biotechnology in India's development trajectory, decisions about which forms of biotechnology development are considered to be most consistent with the national interest, and choices about the appropriate role in this development of foreign investors as opposed to domestic enterprises. Given the enormity and economic and global significance of these choices, we can expect to see continued intense engagement with the policy-process by all actors with a stake in the issue. It is clear at the moment that larger biotech multinational companies have been reasonably successful in associating their own narrow commercial interests with the broader development goals of the Indian state. It is ironic that they have achieved this at a time when many other countries, notably the very country they seem to regard as their greatest competitor, China, has made a relative retreat from its former unbridled support for the technology. China should offer a salutary lesson in this regard. The battle to define biotechnology futures and whom the technology should serve will not be won easily in India or anywhere else. It will be waged for many more years, subject to ongoing contestation by each of the actors discussed in this paper.

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